

# DIY Wheelchairs and Adaptive Devices for Recreation

Presented by Erik Kondo

# Who Am I?

- I am connected with a large amount of active wheelchair users throughout the world.
- An active wheelchair user since 1984.
- I am involved in a variety of outdoor wheelchair related recreations.
- An entrepreneur, philanthropist, and innovator.

I promote

The DIY  
Wheelchair  
Movement



The problem as I see it:

The global system of wheelchair provision is systemically flawed.

# The Five Failures of Wheelchair Provision

The global system of wheelchair provision has created these five universal problems throughout the world.

**1**

**Wheelchair  
Deserts**

**2**

**Inappropriate  
Wheelchairs**

**3**

**Inadequate  
Repairability**

**4**

**Wheelchair  
Profiteering**

**5**

**Low  
Wheelchair  
Literacy**

# 1 Wheelchair Deserts

- Areas where no wheelchairs are available.
- Most common in remote, low-resource regions.
- People may spend decades immobile — fully excluded from society.



Celestine in Nigeria had no wheelchair for ten years.

## Key Takeaway

Without access to a wheelchair, people are immobilized and socially excluded.

## 2 Inappropriate Wheelchairs

- Wheelchairs exist, but don't suit users' real environments.
- Cheap hospital-style wheelchairs fail on rough terrain.
- Bulk donations arrive without individual fitting.



Wheelchair users in Pakistan in hospital wheelchairs.

### Key Takeaway

Improperly designed and ill-fitting wheelchairs reduce mobility and independence.

### 3

## Inadequate Repairability

- Wheelchairs break down and are difficult and costly to fix.
- Many are designed to be discarded, not repaired.
- Proprietary parts and poor supply chains compound the problem.

A broken  
down  
wheelchair  
in Nigeria.



### Key Takeaway

If wheelchairs were as repairable as bicycles, this failure would not exist.

## 4

# Wheelchair Profiteering

- Industry dominated by private equity conglomerates.
- Expensive wheelchairs are designed with high margin materials and planned obsolescence.
- Affordable options are suppressed; costly accessories pushed.

Marketing image for a high-end carbon fiber wheelchair.

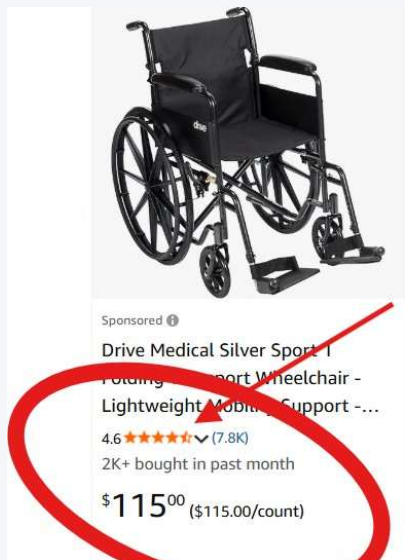


## Key Takeaway

Users have little choice in a system structured to profit from limited options.

# Low Wheelchair Literacy

- Wheelchairs are poorly understood by the public.
- Accepted “expertise” resides with professionals who are non-wheelchair users.
- Many wheelchair users are unaware of options or basic maintenance.



The best selling  
(yet poorly  
functioning)  
Drive Silver Sport  
gets close to a  
Five Star Rating  
from the public.

## Key Takeaway

Low public literacy enables every other failure in the system.

# Building DIY Wheelchairs Help Solve These Problems

## **Wheelchair Deserts**

Provides wheelchairs when none are available.

## **Inappropriate Wheelchairs**

Provides customized wheelchairs for the specific environment and use.

## **Lack of Repairability**

If you made it, you can also fix it.

## **Wheelchair Profiteering**

Enables wheelchair users to obtain affordable alternatives.

## **Low Wheelchair Literacy**

Increases wheelchair knowledge for all involved.

In terms of recreation, (even in wealthy countries) wheelchair users are missing out.

- They don't want to put their primary wheelchair in the water.
- They don't want to get their primary wheelchair sandy, muddy, or snowy.
- They don't want to risk damaging their primary wheelchair.
- Their primary wheelchair is not setup for many specialized activities.

# Barriers to DIY Wheelchairs

- Fear of not making it “right”.
- Fear of criticism.
- Fear of not being an “expert”.
- Fear of not following the “norm”.
- Fear of failure.

# Making DIY Wheelchairs

Success fabrication of DIY wheelchairs requires having the three primary elements of:

**(1) Know How**

**(2) Manufactured Parts &  
Components**

**(3) Fabrication Ability**

# Know How

Comes from the sharing of fabrication knowledge through open source projects and education.

**Know how**

**Manufactured Parts &  
Components**

**Fabrication Ability**

# Manufactured Parts & Components

Acquisition of inexpensive (universal) aftermarket parts manufactured domestically and internationally.

**Know How**

**Manufactured Parts & Components**

**Fabrication Ability**

# Fabrication Ability

Access to the people who make stuff and the tools and places where things are made.

**Know How**

**Manufactured Parts &  
Components**

**Fabrication Ability**

# A Functional Example

The Outsider  
PVC Wheelchair

# Riddle

*What is a wheelchair made for an able-bodied person?*